80Pro

Mounter, Laminator and Encapsulator

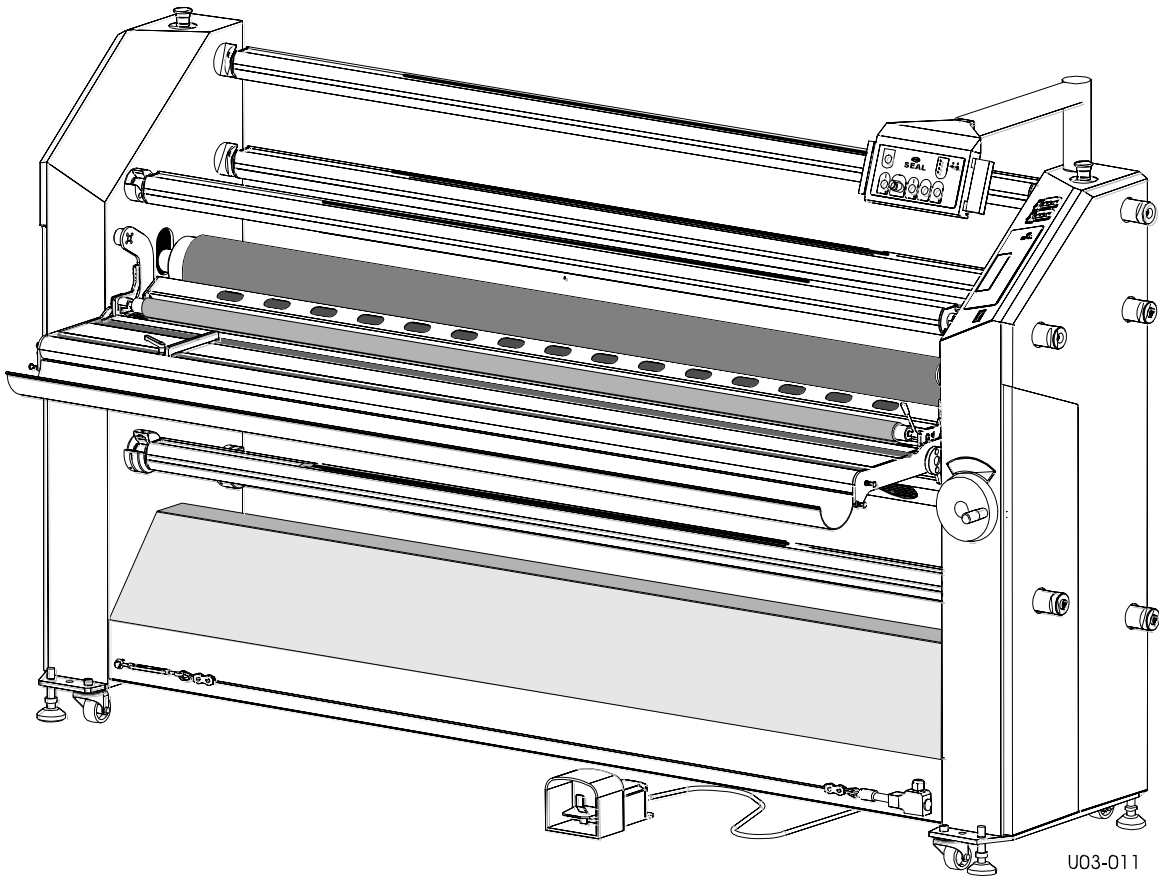
English

Français

Deutsch

Español

Italiano



User Manual

UM112EN, Rev.1.0
Nov.2003

INTRODUCTION

Thank you for purchasing your Seal 80*Pro*.

Maximum effort has been invested in the design of this machine to give you years of reliable service.

As you become familiar with your machine you will appreciate the high quality of its output and the excellence in engineering stated in its smartly styled design.

The machine described in this manual is a multi-functional wide format machine that can perform the following processes;

- high-quality lamination,
- panel mounting of images,
- mounting and laminating in one pass,
- decaling,
- encapsulating images,
- Image roll to roll processing.

A vast number of laminating products are available. All of them with their own applications and processing specifications.

This manual gives a general description of various processes.

For more details on film choice and application solutions refer to the Seal films and adhesives product catalog.

On this machine the process results can be controlled by:

- temperature setting (for upper and lower roller separately),
- speed setting,
- pressure setting,
- unwind tension of the film(s),
- use of pull rollers.

THIS MANUAL

This manual is intended for the user of the 80*Pro*. Read this manual carefully before starting the machine.

This manual contains important information for correct installation, operation and maintenance of the machine.

It also contains important instructions to prevent accidents, personal injury and/or serious damage prior to or during operation of the machine.

Familiarize yourself thoroughly with the functioning and operation of this machine and strictly observe the directions given.

If you have any questions or need further details on specific aspects related to this machine, please do not hesitate to contact us. The address and phone number are stated on the copyright page.

Chapter 1 will provide you with a summary of the manufacturers warranty information. It also describes the safety features installed on the machine and gives a number of safety instruction and warnings. **Read this chapter carefully**.

Chapter 2 provides a general description of the machine and of the process principles to help first time users to find their way on this machine.

Chapter 3 specifies the machine, machine dimensions and the dimensions of the materials to be used on this machine.

Chapter 4 guides you through the installation of the machine. This chapter also provides information for moving, transport and decommissioning of the machine.

Chapter 5 guides you through the operation in various processes to develop basic knowledge of the machine.

Chapter 6 provides maintenance procedures for long time efficient and trouble free operation of the machine. The trouble shooting section gives a number of suggestions in case the results are not up to expectation.

Chapter 7 is the glossary and explains a number of terms used in this manual.

TABLE OF CONTENTS

1. Warranty and Safety instructions 7

1.1 Warranty 7
1.1.1 Warranty conditions 7
1.1.2 Warranty period 7

1.2 Safety 8
1.2.1 Safety features 8
1.2.2 Safety instructions 9

1.3 Warnings 9
1.3.1 General ESD-warning 9
1.3.2 In this manual 9
1.3.3 On the machine 10

2 Description 11

2.1 General description 11

2.2 Parts identification 12
2.2.1 Machine parts 12
2.2.2 Laminating foiles 13

2.3 Process principle 14

3 Specifications 15

3.1 Identification 15

3.2 Machine dimensions 15
3.2.1 Uncrated 15
3.2.2 Crated 15
3.2.3 Working area 15

3.3 Material specifications 16

3.4 Machine specifications 16

4 Installation 17

4.1 Unpacking 17

4.2 Installation 19

4.3 Transport 20

English

5 Operating 21

5.1 Process controls 21
5.1.1 Control panel 21
5.1.2 Heater control 23
5.1.3 Additional controls 24
5.1.4 Error indications 28

5.2 Operating modes 29
5.2.1 Normal forward mode 29
5.2.2 Reverse mode 29
5.2.3 Slow mode 30

5.3 Placing film rolls 31
5.3.1 Auto-grip shafts 31
5.3.2 Use of films with release liner 31
5.3.3 Loading shaft with film rolls 32
5.3.4 Presetting the tension 33
5.3.5 Pressure setting 33

5.4 Webbing 34
5.4.1 Upper section only 34
5.4.2 Upper and lower section 36
5.4.3 Roll to roll 38
5.4.4 Pull rollers 39
5.4.5 Unloading 39

5.5 Processes 40
5.5.1 Mounting images or decals 40
5.5.2 Pre-coating panels 41
5.5.3 Single-sided lamination 42
5.5.4 Over-lamination 42
5.5.5 Double-sided lamination 42
5.5.6 Encapsulation 43
5.5.7 Decaling 43

5.6 Settings 43

6 Maintenance 44

6.1 Cleaning 44
6.1.1 Cleaning the silicone covered rollers 44

6.2 Preventive maintenance 45
6.2.1 Auto-grip shafts 45

6.3 Trouble shooting 45

6.4 Technical assistance 47

7 Glossary 48

1 WARRANTY AND SAFETY INSTRUCTIONS

1.1 Warranty

The warranty period and conditions stated in this chapter are merely a summary of the general Seal warranty conditions.

For the exact details on the warranty period and conditions for your machine, please contact your dealer.

1.1.1 Warranty conditions

The manufacturer warrants to the original end user* that the machine when proven defective in materials or workmanship, within the applicable warranty period will be repaired, or (at our option) replaced without charge.

> **Note:**
> The main rollers and pull rollers are subject to normal wear and tear and therefore have warranty on material defects only.

The manufacturer or its representative shall not be liable for any damage caused by the machine nor loss of productivity.

Warranty is voided when:

- Changes or modifications are made to this machine, not explicitly approved by the manufacturer.
- The machine is changed or modified by unauthorized persons.
- The machine is used under other than normal working conditions.
- The machine is used for purposes other than intended for (see page 3).

* The original end user is the person that first purchased the machine from the manufacturer or its representative.

1.1.2 Warranty period

The standard warranty period on this machine is one year from the date of purchase.

The main rollers and pull rollers have a warranty period of half a year on material defects only.

The warranty ends when:

- The periods stated above have expired.
- The machine changes possession.
- Warranty is voided by any of the conditions mentioned above.

1.2 Safety

This machine is provided with safety equipment to promote safe machine operation.

The manufacturer has done everything possible to prevent any possible danger and to inform you as accurately and comprehensively as possible of any hazards relating to the operation of the machine.

You should nevertheless proceed with caution when operating the machine.

Read the safety instructions below and familiarize yourself with the warning symbols summarized in the Warnings section.

1.2.1 Safety features

Emergency stops

The machine has 2 Emergency stops. When activated the Emergency stops switch off the power to the motor controller after the machine has come to a complete stop.
The Emergency stops must be disengaged before a restart is possible.

Optical safety devices

The machine has an optical safety device at the input side of the nip at the main rollers. This device performs a check of the operation between transmitter and receiver.

When an error is detected (e.g. the signal is interrupted) the motor controller will be disabled and the motor will stop.

The stop signal from the optical device is overruled when:

- The machine is running in reverse direction,
- The slow mode has been activated and the footswitch is pressed.

Safety footswitch

The safety footswitch is used as remote control to start and stop the machine in the normal and the slow mode.

WARNING:

THE OPTICAL SAFETY DEVICE IS DISENGAGED WHEN USING THE SAFETY FOOTSWITCH IN SLOW MODE.
SO, KEEP CLEAR OF THE NIP WHEN PRESSING THE FOOTSWITCH, WHILE SLOW MODE IS ACTIVE.

The safety footswitch is protected with a safety lock to prevent accidental switching. Insert the forefoot completely to disengage this lock.

Slow mode

The slow mode is used when setting up the machine with new films or images.

In slow mode the machine is started with the footswitch and will then run at slow speed so that the operator has both hands free to position and feed new film or image correctly into the machine.

1.2.2 Safety instructions

Work safely!

The owner of the machine is responsible for safe operation of the machine. He therefore is obliged to familiarize operating personnel with the contents of this manual and make them aware of all possible hazards.

Do not change, remove or disable the safety facilities.

1.3 Warnings

1.3.1 General ESD-warning

WARNING:

DANGER OF ELECTRIC SHOCK BY ELECTROSTATIC DISCHARGE. PROCESSING FILMS THROUGH LAMINATING ROLLERS WILL CAUSE BUILD-UP OF ELECTROSTATIC CHARGES.

An anti-static floor coating and wearing anti-static clothing and footwear can reduce the risk of ESD-shock.

1.3.2 In this manual

In this manual you will find 3 levels of warnings.

WARNING:

THE WARNING MESSAGE IS USED WHEN A LIFE-THREATENING SITUATION MAY ARISE OR PERSONAL INJURY CAN OCCUR. FOLLOW THE INSTRUCTIONS CLOSELY.

CAUTION:
The caution message is used when there is danger of damage to the machine or materials.
Follow the instructions to prevent this damage.

Note:
This message is used to give you useful information for easier operation, to prevent waste of material, etc..

1.3.3 On the machine

On the machine (See Figure 1) you will find the following warning symbols in black on a yellow background.

HOT OBJECTS (1)

DANGER OF GETTING BURN WOUNDS.
MAKE SURE NOT TO TOUCH THE UPPER MAIN ROLLER WHEN HEATED.

This symbol is placed on the inside side panel on both sides of the machine, just above the upper main roller, visible from the front and rear side. Also on the image guide at the input side of the nip and on the output nip safety bar (1).

ROTATING PARTS (2)

DANGER OF GETTING INJURED BY ROTATING PARTS.
MAKE SURE THAT THESE ROTATING PARTS DO NOT CATCH YOUR FINGERS, CLOTHING, HAIR, ETC.

This symbol is placed on in-feed table arms, on the cabinets just above and below the output table and on the pull roller safety bar (2).

ESD SHOCK (3)

DANGER OF GETTING AN ELECTRIC SHOCK CAUSED BY ELECTROSTATIC CHARGE BUILD-UP IN THIS AREA.

This symbol is placed on those places where electrostatic charges can be build-up. The output side of the machine and the output material are most likely building up charges. Therefore ESD-symbols are placed on the output nip and pull roller safety bars (3)

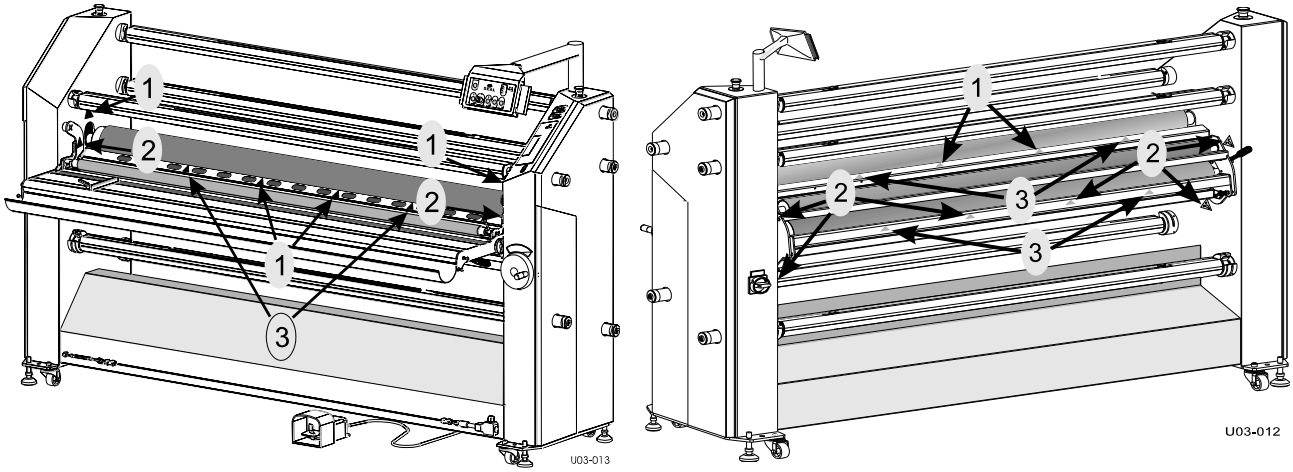


Figure 1: Warning symbol locations.

2 DESCRIPTION

This chapter describes the machine and its operating basics.

2.1 General description

The machine described in this manual is a mono-directional machine dedicated for processing pressure sensitive or heat activated materials.

While feeding through images and the coating films, the two silicone coated main rollers generate the pressure.

The area where the upper and lower main roller meet is called the “nip”. The upper main roller can be moved up or down manually, so the nip can be varied to feed materials of various thicknesses. A mechanical read-out shows the value set.

The nip setting handwheel also sets the pressure for the laminating process.

The lower main roller is motor driven. The speed can be manually set between zero and a given maximum value.

Because both rollers are equipped with a heater, heat activated materials can also be processed with these rollers. Each roller has its own temperature control unit, so top and bottom roller temperature must be set separately.

In addition to the main rollers a pull roller set is provided to prevent warping of encapsulation results. (This set is not suited for cold lamination processes.)

A cooling device is installed in front of the pull roller set. When both heaters are turned on, the cooling device will prevent the pull rollers from warming up too much and therefore prevents the encapsulation result from showing wrinkles.

Five material shaft positions are standard on the machine. Three of these shaft positions can function as both an unwind or as a wind-up position, which makes the machine more flexible and enables roll to roll processing for some processes.

The machine can be divided into an upper and a lower section.

The upper section, above the in-feed table, consists of 3 auto-grip shaft positions and a splitter bar (idler).

The top shaft position is for unwinding film, the one on the front side for winding e.g. the release liner. The third shaft position is an unwind/wind-up position, which enables more flexibility in the use of this section.

The 2 shaft positions in the lower section are both unwind/wind-up positions, which gives maximum flexibility for this section.

When laminating media from a roll it is very important to feed the media correctly into the nip, otherwise it will run out of the foil width. For this purpose the in-feed table media guide and table rollers are added to the in-feed table.

When not needed the in-feed table rollers and the image guide can be lowered into the table.

A media roll can be placed in the trough at the front end of the table or on an unwind shaft position.

2.2 Parts identification

2.2.1 Machine parts

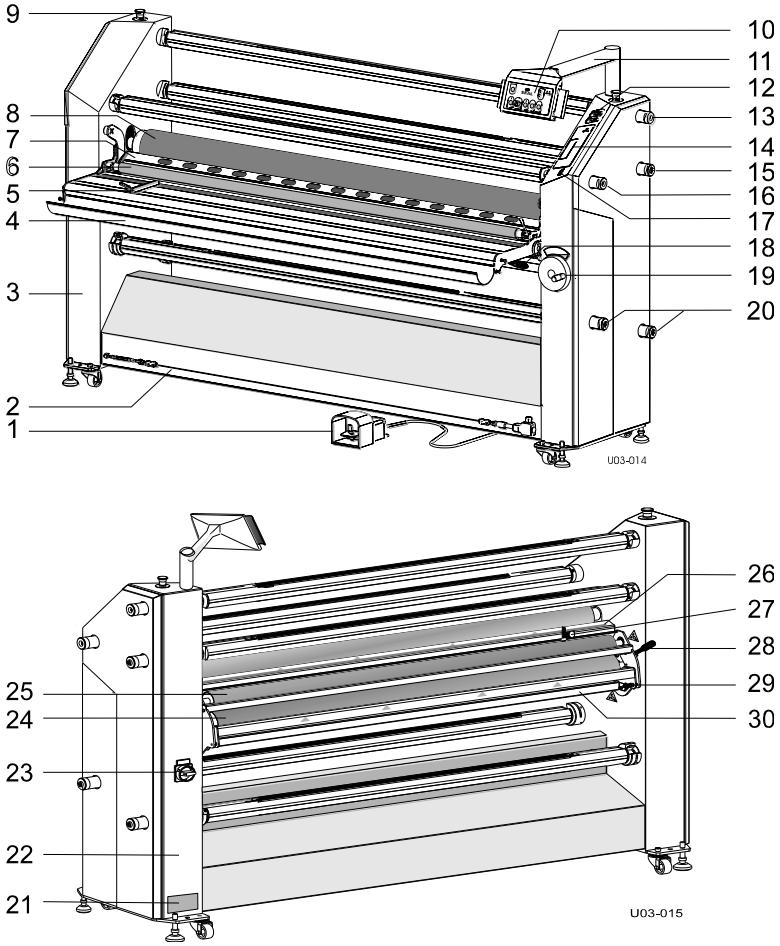


Figure 2: Main parts identification.

1 Foot switch
2 Emergency trip wire
3 Cabinet (left hand side)
4 In-feed table media unwind trough
5 In-feed table media guide
6 In-feed table rollers
7 Image guide
8 Upper main roller
9 Emergency button
10 Control panel
11 Swivelling arm
12 Heater control
13 Unwind tension control
14 Nip-setting indication
15 Unwind/wind-up tension control
16 Wind-up tension control
17 Cooling fan ON/OFF switch
18 Cooling fans
19 Nip setting handwheel
20 Unwind/wind-up tension controls
21 Identification label
22 Cabinet (right hand side)
23 Power switch
24 Bottom pull roller
25 Top pull roller
26 Slitter bar ruler
27 Slitter
28 Pull roller lever
29 Pull roller detent
30 Finger protection bracket

2.2.2 Laminating foiles

Figure 3 shows the cross section of the layers in the decal process. In this process the largest number of layers is possible.

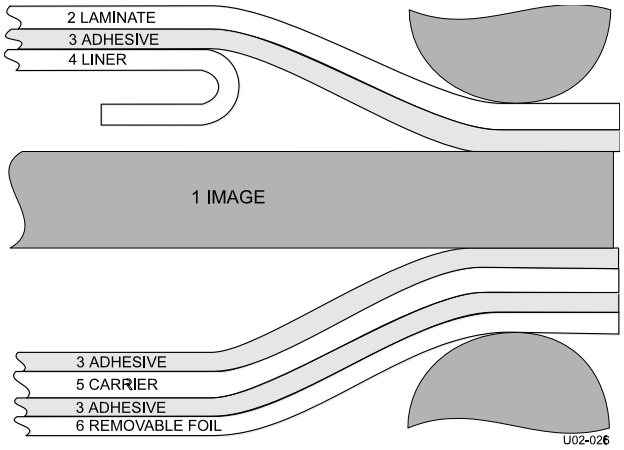


Figure 3: Cross section of layers, when making a decal.

Decaling in general is a cold process, where the bottom layer has no release liner. The removable foil (6 = release liner) is not removed during the decal process. The carrier (5) is not always present. In that case the removable foil (6) also functions as carrier.

The top layer is a normal pressure sensitive laminate, in this case with a release liner.

Heat sensitive laminates in general have no release liners (4), so they just consist of the laminate (2) with a heat activated adhesive layer (3).

Pressure sensitive (cold process) foils without release liner and heat sensitive foils in general have their adhesive layer on the inside of the roll.

The release liner on foils from North American manufacturers in general is also on the inside of the roll, whereas the release liner on rolls from European and Asian manufaturers is in general on the outside of the roll.

2.3 Process principle

In all processes the materials are fed through the nip from the front side to be joined together by pressure and/or temperature.

A process that makes maximum use of the machine is shown in Figure 4. Shown is an image roll to roll process with a heat sensitive top and bottom layer.

The image that has to be coated on both sides is unwound from a roll in the in-feed table trough (1) and fed between the main rollers (2) via the in-feed table rollers (3). The upper unwind/wind-up shaft (6) is set as a wind-up to roll up the finished product.

The top coating film is taken from a supply roll on the top unwind shaft (5). The bottom coating film is taken from a supply roll on the lower unwind/wind-up shaft (9).

When using a pressure sensitive laminate, it often has a release liner (as shown in the upper section) that has to be removed. It runs over a splitter bar (7) where the release liner is removed. This release liner is rolled up onto a cardboard core placed on the wind-up shaft (4) in the upper section.

When using a pressure sensitive laminate without a release liner, it must not run via the splitter bar to avoid getting adhesive residue on it.

The main rollers can be heated. The heat sensitive film is fed under the splitter bar providing maximum contact surface with the heated main rollers.

When encapsulating (hot sealing images), an additional set of pull rollers (8) is used to prevent wrinkles after cooling down.

When continuously encapsulating (roll to roll) the pull rollers will warm up slowly. To prevent this, the cooling unit can be turned on. This cooling unit (10) keeps the bottom pull roller at room temperature, which in its turn absorbs the heat from the encapsulation result.

The slitters (11) can be used to cut off the edges when processing roll to roll.

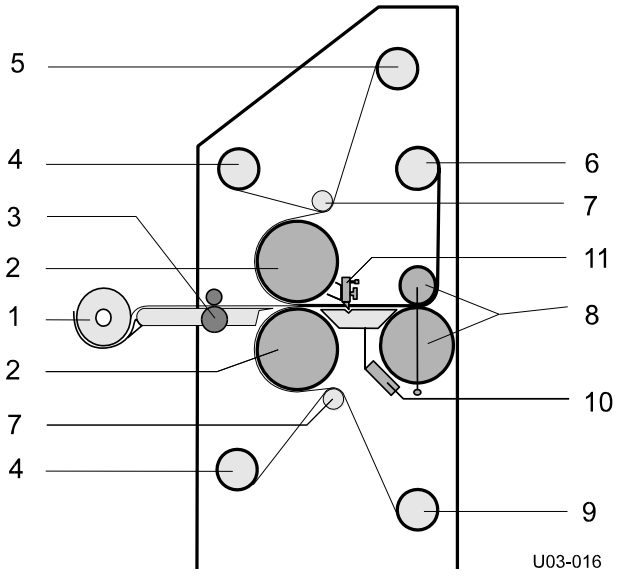


Figure 4: Creating Pop-up art, including image supply from roll.

3 SPECIFICATIONS

3.1 Identification

The machine identification label (example in Figure 5) is located at the bottom of the right-hand cabinet, on the rear side of the machine.

This label indicates the model (version) and the power supply requirements.

CAUTION:
The mains supply must match the values indicated on the machine identification label.

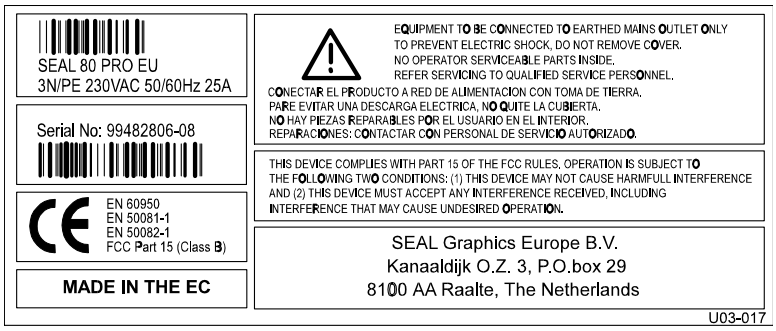

SEAL 80 PRO EU
3N/PE 230VAC 50/60Hz 25A
Serial No: 99482806-08
EN 60950
EN 50081-1
EN 50082-1
FCC Part 15 (Class B)
MADE IN THE EC
EQUIPMENT TO BE CONNECTED TO EARTHED MAINS OUTLET ONLY
TO PREVENT ELECTRIC SHOCK, DO NOT REMOVE COVER.
NO OPERATOR SERVICEABLE PARTS INSIDE.
REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.
CONECTAR EL PRODUCTO A RED DE ALIMENTACION CON TOMA DE TIERRA.
PARE EVITAR UNA DESCARGA ELECTRICA, NO QUITE LA CUBIERTA.
NO HAY PIEZAS REPARABLES POR EL USUARIO EN EL INTERIOR.
REPARACIONES: CONTACTAR CON PERSONAL DE SERVICIO AUTORIZADO.
THIS DEVICE COMPLIES WITH PART 15 OF THE FCC RULES. OPERATION IS SUBJECT TO
THE FOLLOWING TWO CONDITIONS: (1) THIS DEVICE MAY NOT CAUSE HARMFULL INTERFERENCE
AND (2) THIS DEVICE MUST ACCEPT ANY INTERFERENCE RECEIVED, INCLUDING
INTERFERENCE THAT MAY CAUSE UNDESIRED OPERATION.
SEAL Graphics Europe B.V.
Kanaaldijk O.Z. 3, P.O.box 29
8100 AA Raalte, The Netherlands
U03-017

Figure 5: Machine identification label (example).

3.2 Machine dimensions

3.2.1 Uncrated	Metric		American	
Width	267	cm	105	in.
Height	165	cm	65	in.
Depth (excl. in-feed table)	59	cm	23.2	in.
Maximum depth	108	cm	42.5	in.
Working height	90	cm	35.4	in.
Weight	780	kg	1719	lbs

3.2.2 Crated				
Width	275	cm	108.3	in.
Height	180	cm	71	in.
Depth	90	cm	35	in.
Weight	840	kg	1851	lbs

3.2.3 Working area				
Width	390	cm	154	in.
Depth	190 cm (75 in.) + 2x maximum board length			

Note:
Anti-static clothing and footwear of the operator and an anti-static floor coating will help reduce the build-up of electrostatic charges (ESD).
A relative humidity of at least 70% also helps reducing ESD-build-up.

3.3 Material specifications

	Metric		American	
Maximum width				
Process up to 50°C (122 °F)	2005	mm	80	in.
Process up to 125°C (257 °F)	1954	mm	78	in.
Maximum roll diameter				
Material unwind (top and upper unwind)	200	mm	8	in.
Material unwind (top unwind only)	305	mm	1	ft.
Material unwind (bottom unwind)	305	mm	1	ft.
Release liner wind-up	180	mm	6	in.
Media in table trough	120	mm	4	in.
Maximum weight media unwind in table trough	5	kg	11	lb.
Maximum panel thickness	38	mm	1.5	in.
Roll core inside diameter	76.2	mm	3	in.

3.4 Machine specifications

Power supply

Europe	3N/PE 230VAC +/- 10%, 50/60Hz, 25A
USA	1N/PE 230VAC +/- 10%, 50/60Hz, 50A

For the correct supply voltage version refer to the identification label on the machine.

Standard material positions

Material unwind	1 (auto-grip)
Media unwind	1 table trough
Release liner wind-up	1 (auto-grip)
Unwind/wind-up	3 (auto-grip)

Optional features

Slitters

Nip (gap) setting	0–40	mm	0 – 1 $^{9}/_{16}$	in.
Pressure	1–2.5	N/mm	5.71–14.28	lbf/in.
Process speed				
Maximum	6	m/min	20	ft/min
Slow mode	0.6	m/min	2	ft/min
Maximum roller temperature	140	°C	284	°F
Noise level	<70	dB(A)		

4 INSTALLATION

WARNING:
INSTALLATION MUST BE CARRIED OUT BY SKILLED PERSONNEL.

English

Note:
Make sure that the machine, in its final location, has adequate space. You will need room to feed, receive and trim images.

4.1 Unpacking

At delivery, the machine is packed in a plastic bag to avoid moisture penetration. It is transported in a carton box and is fastened onto a wooden pallet.

Note:
Unpacking the machine requires at least 2 persons.

The machine is equipped with castors that allow easy movement.

Place the pallet in a space where there is enough room to roll the machine off from the pallet (approx. 3x the length).

To unpack, follow the steps below (also refer to Figure 7);

1. Cut the straps and lift off the carton box.

2. Remove the plastic bag.

3. Place the two ramps (4) against the roll-off side of the pallet so that the castors (5) will run clear from the edge.

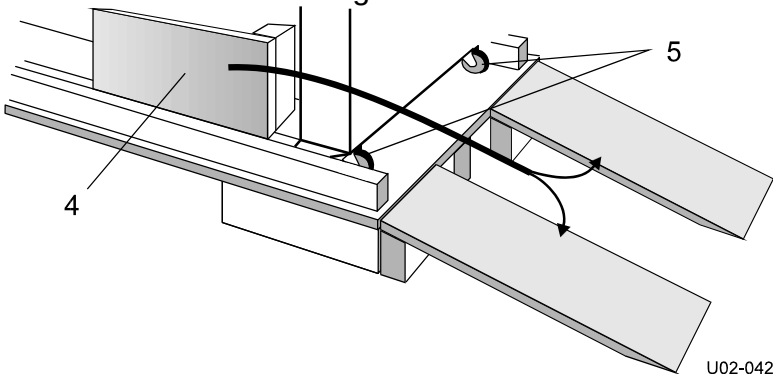


Figure 6: Ramp positioning.

4. Put all the loose accessories aside.

5. Remove the four securing bolts (1).
6. Turn down the four leveling feet (2) to lift the machine.
7. Remove the wooden blocks (3).

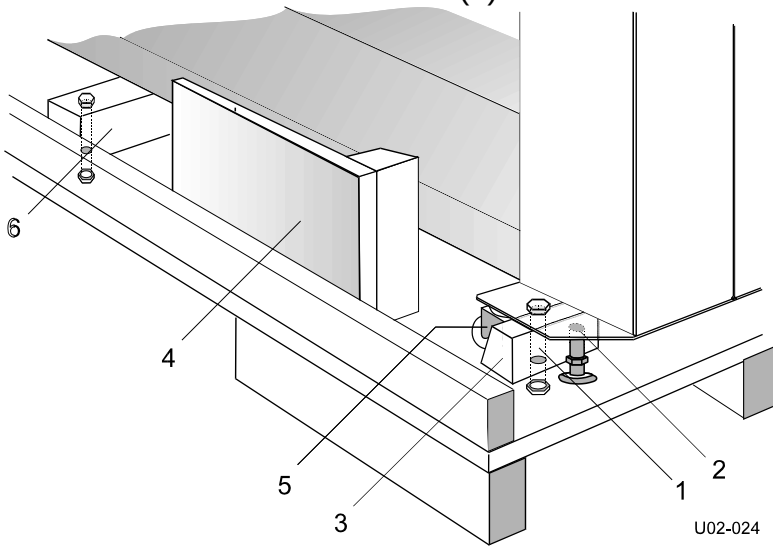


Figure 7: Removing transport parts.

8. Turn the support block (6) 90° to make room for the machine to pass by.
9. Turn up the four leveling feet (2) completely to put the machine on its castors (5).
10. Roll the machine off carefully from the pallet using the ramps.

WARNING:
ROLL THE MACHINE OFF WITH 2 PERSONS. IT IS HEAVY AND CAN NOT BE CONTROLLED ALONE.

Note:
Save all packing material for later moving over long distances or discard of according to local regulations.

4.2 Installation

1. Move the machine (and the accessories) to its final location.

Note:
Allow ample working space. See Figure 8.

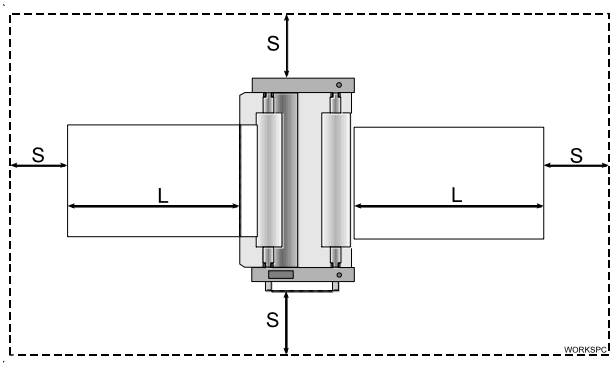


Figure 8: Working space.

L = Maximum board length, S = Minimum space 60 cm (24 in.).

2. Turn down the four leveling feet until the castors are off the floor.

3. Remove all transport material.

- Remove the straps holding the control panel arm
- Cut the straps around the shaft suspensions and remove the foam pads.
- Cut the straps holding the in-feed table arms
- Cut the straps around the main roller axis and move up the top main roller to remove the transport blocks from the nip.
- Cut the straps holding the upper pull roller and open the pull rollers to remove the transport plates.

4. Put a spirit level on the upper main roller and level the machine by adjusting the four leveling feet.

CAUTION:
Check the mains values before connecting. See section 3.4 for power supply details.

5. Connect the machine to the mains using the power cable supplied with the machine.

CAUTION:
Only if absolutely necessary, use an extension cable of ample capacity. Unroll the extension cable completely.

WARNING:
MAKE SURE THE POWER SUPPLY CABLE AND/OR THE EXTENSION CABLE IS NOT BLOCKING YOUR WAY AROUND THE MACHINE.

English

4.3 Transport

The machine can be transported on a smooth surface on its castors.

CAUTION:
Turn the leveling feet up completely to prevent them from bending or breaking if accidentally bumping into an obstacle.

On rough surfaces use a pallet truck or forklift. Set the forks as far appart as possible.

When moving the machine over long distances, use original pallet and packing material and follow the unpacking procedure in the opposite way.

5 OPERATING

This chapter describes the function of the controls and indicators, the operating modes, how to set up and operate the machine and a number of applications.

5.1 Process controls

This section gives an overview of the functions of the controls on the control panel (Figure 9), the heater control (Figure 10) and elsewhere on the machine (Figure 12).

Note:
Switch on the heaters approximately 1 hour before use, if a process requires the rollers to be heated. Close the nip and let the machine run at low speed, to avoid uneven hot spots.

5.1.1 Control panel

This paragraph describes the controls and indicators on the control panel.
When LED's are blinking, this indicates an error. Refer to section 5.1.4 for their meaning.

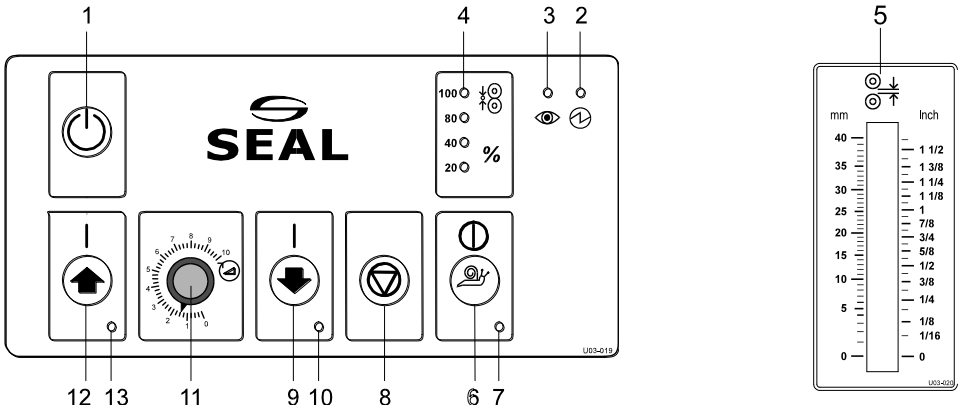


Figure 9: Control panel.

The panel on the right is situated on the right-hand cabinet.

Control ON/OFF (1), toggle pushbutton;
Press for 1 second to switch the machine from stand by to active and back.

WARNING:

THE MACHINE IS CONSTANTLY POWERED WHEN THE POWER CORD IS PLUGGED IN AND THE MAIN POWER SWITCH IS TURNED TO ON.

Power indicator (2), LED;
The LED lights up when the machine is powered.
It flashes when the machine is in stand-by mode.

Safety indicator (3), LED;
The LED lights up when the beam of the optical safety device at the input side of the nip is not interrupted.

Pressure indication (4), 4 LED's;
The LED's indicate the pressure setting of the main rollers. When 2 LED's light at the same time, they indicate the tens in between. See specifications for actual pressure range. All four LED's flashing indicates a pressure or nip setting error (see section 5.1.4).

NIP setting indication (5), Pointer;
This mechanism is directly coupled with the nip control and indicates the distance (nip) between the main rollers, set by the handwheel.

Slow mode (6), toggle pushbutton;
Press for 1 second to switch slow mode ON or OFF.
To run at the fixed slow mode speed the footswitch must be pressed.

CAUTION:
When slow mode is active the machine can still run at high speed.
Slow mode indication is NOT a speed indication. It is a working method.

Slow mode indicator (7), LED
The LED lights when slow mode is selected.

Stop (8), pushbutton;
Press to stop the rotation of the rolls.

Reverse (9), snap pushbutton;
Press and hold for rotation of the rolls in reverse direction.

Reverse indicator (10), LED;
The LED lights when the reverse mode is selected.

Speed control (11), control knob;
Sets the speed anywhere in a range between 0 and 10 (See specifications for actual speed range).

Start (12), pushbutton;
Press to start the rotation of the rolls in the forward direction.

Forward indicator (13), LED;
The LED lights when the forward mode is selected.

5.1.2 Heater control

The two heater controls above the control panel are equal. The upper heater control regulates the temperature of the upper main roller. The lower heater control is for the bottom main roller heater.

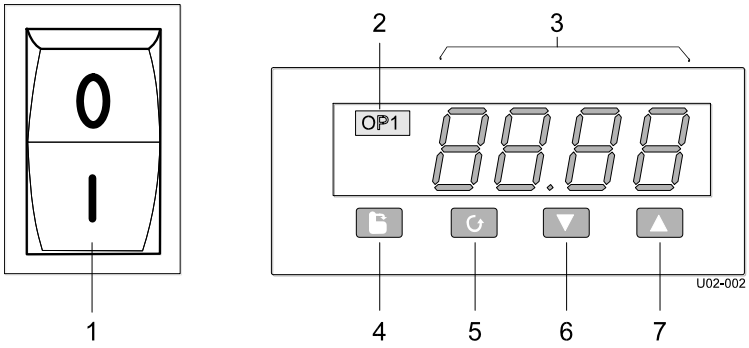


Figure 10: Heater-control section.

The heater control is on as soon as the machine (control) is turned on.

The actual temperature of the roller is now displayed (3) on the temperature control display. The heater itself is turned ON and OFF by the 0/I switch (1). Press I to turn the heater ON.

The heater has a factory defined temperature range. Within this range the roller temperature can be regulated. The temperature setting is displayed when the up (7) or down (6) button is pressed, and changed by pressing the up (7) or down (6) buttons again.

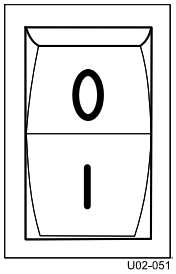
If the actual temperature is lower than the set temperature, the heater element is turned ON and in the operation display position (2) OP1 is displayed.

Note:
The heated roller needs time to reach its set temperature (e.g. from room temperature to maximum takes approximately 1 hour). It is recommended to let the machine run at a low speed, to avoid uneven hot spots.

The buttons (4) and (5) are for configuration change purposes and should not be used.

In case of an accidental selection of any menu, press both buttons (4) and (5) together (or do not press any key for 45 seconds) to return to the home (default) display. When the faulty display persists, call your service organisation.

Cooling device



The cooling device is switched ON by the switch on the right cabinet below the nip indication.

The cooling fans are cooling the bottom pull roller which in its turn is cooling the encapsulation result.

Figure 11: Cooling On/Off switch.

English

5.1.3 Additional controls

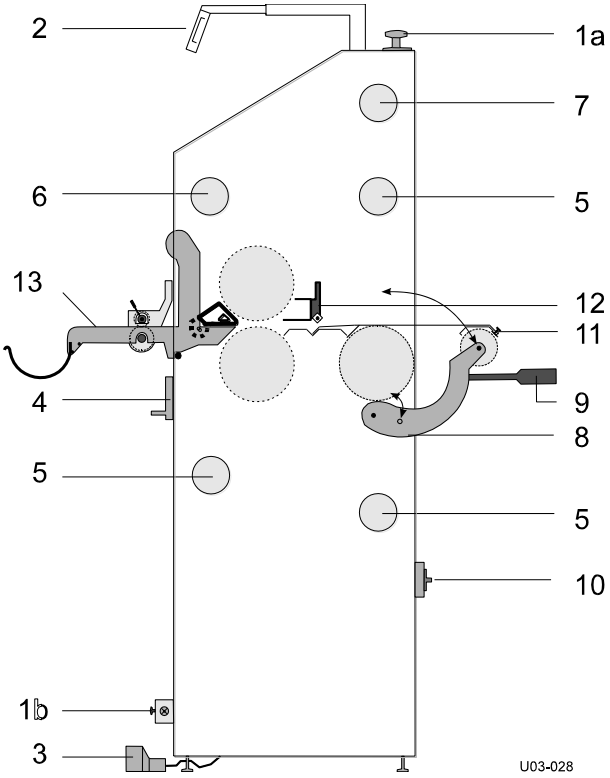


Figure 12: Additional controls

Emergency stops (1),

Stop buttons (1a), push and hold button;

When pressed the rotation of the rollers is stopped immediately and the button is locked into this stop position.

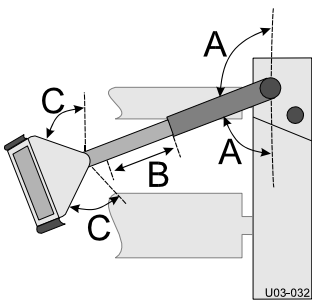
Turn the button to unlock it.

Pressing start, reverse or pressing the footswitch starts the process again.

Trip wire (1b)**,** wire attached to a pull and hold switch;

When the wire is pulled or stept on the switch will immediately stop the rollers. The switch is locked in this position and has to be pulled before the machine can be started again.

Contol panel arm (2),



The arm can swing (A) 180° over the machine from front to rear and back, within the width of the machine.

The control panel is mounted on an extendable arm. By pulling the grips the arm can be extended (B) approximately 27cm.

The panel assembly can rotate (C) within a limited radius of 90°.

Figure 13: Control panel arm

Foot switch (3), snap switch;

Press and hold the switch to start the rotation of the rolls. Insert the forefoot completely to disable the safety lock that prevents accidental starting.

When the switch is released, the rotation of the rolls will stop.

Nip setting wheel (4), geared wheel;

Turn the wheel clockwise to narrow (close) the nip and increase the pressure or

counter-clockwise to decrease the pressure and widen (open) the nip.

When both rollers touch the materials, the pressure is set.

The **nip setting** is indicated on top of the cabinet and the pressure is indicated by led's on the control panel.

Unwind/wind-up tension control (5), knob;

By turning this knob clockwise an amount of friction is set between the shaft and the frame, so this will act as a unwind brake.

Turning the knob counter-clockwise will release the brake.

Turning the knob further counter-clockwise will set an amount of friction between the shaft and the driving sprocket wheel, so this will act as a coupling between motor and shaft. The shaft will now act as a wind-up shaft.

Turning the knob clockwise will release the wind-up shaft again.

Wind-up tension control (6), knob;

By turning this knob clockwise an amount of friction is set between the shaft and the driving sprocket wheel, so this will act as a coupling between motor and wind-up shaft.

To release the tension, turn the knob counter-clockwise.

Unwind tension control (7), knob;

By turning this knob clockwise an amount of friction is set between the shaft and the frame, so this will act as a brake.

Tightening the brake will apply more tension to the material on the shaft.

Turning the knob counter-clockwise will release the brake and therefore release the tension.

English

Pull roller locking knob (8);

Snap-lock (right-hand side, seen from the rear of the machine) to lock the top pull roller into position.

Pull roller handle (9);

Handle to lever the top pull roller into position.

Main power switch (10);

Rotary switch to switch the mains supply to the machine ON or OFF.

The switch can be locked in the OFF position with a padlock.

Pull roller cover-plate lock (11);

Retaining block and locking screw with knob.

Release the retaining block by unscrewing the knob and turn the retaining block a quarter to lock or release the cover plate.

Slitters (12) (optional);

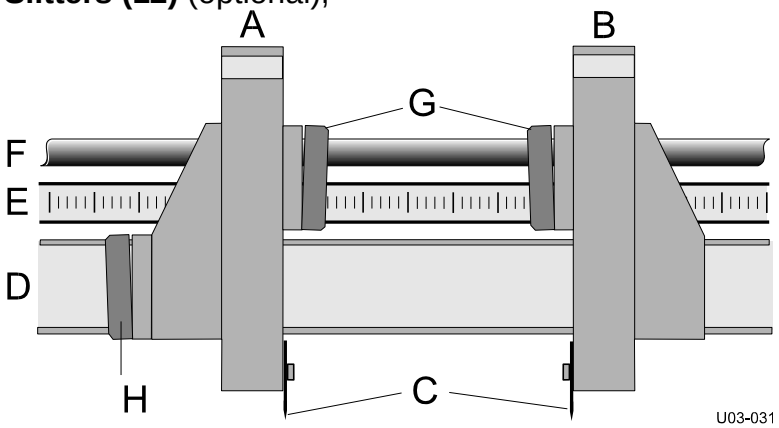


Figure 14: Slitter controls

Slitters are used to cut off the edges with an adjustable width from the result when encapsulating roll to roll.

The slitters (A and B) are sliding along a rail (D) and a tube (F). The position is read on a ruler (E) on the rear finger protection.

When the knob (G) is pressed, the slitter can slide along the tube which allows us to change the distance between the two slitters.

The knob (H) unlocks the slitter (A) from the rail (D) and allows us to move both slitters at the same time and distance. Pressing (H) and (G) on slitter (A) allows to move slitter (A) without moving slitter (B).

The vertical position of the slitter-knife (up is disengaged, down is engaged) is altered by pushing down or pulling up the knife holder at (A) and (B).

In-feed table (13)

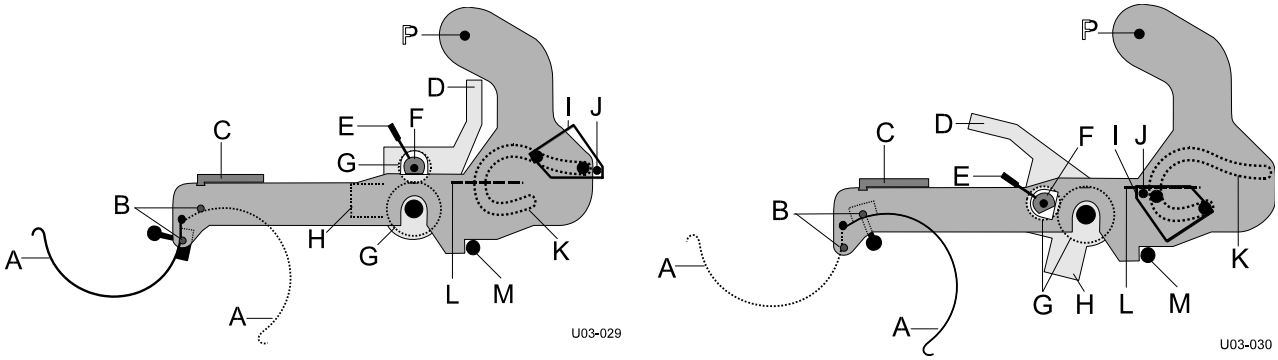


Figure 15: In-feed table controls

The in-feed table can swing up around pivot point (P) till it is upside down. In the upper position it is stopped by the shaft supports and in the lower position by the table stops (M).

The in-feed table has a number of features to help feeding images correctly. Some of these features can only be used in some of the processes.

Unwind trough (A)

To unwind a medium from a roll.

The trough can swing to the front (left) to be used or to the bottom rear (right) to be out of the way. When the trough (A) is in position it is locked with a detent (B).

Media guide (C)

To help feeding in the medium straight the media guide can be set to one side of the medium.

In-feed rollers (G)

Another aid to feed-in the medium straight are the in-feed rollers.

These rollers can not be used when processing panels and must be moved out of the way by pulling down the handle (D). The centre of rotation is the shaft of the lower roller. The upper roller moves into the table, where it replaces the table element (H).

The upper roller can be lifted from the bottom roller with the handle (E) which rotates an excentric (F) on the shaft. The flattening allows the upper roller to rest on the bottom roller.

On the right side of the bottom in-feed roller a brake is installed that can be set by a small handwheel (G). With this brake tension can be set to the medium. Turning the wheel clockwise sets the tension and counter-clockwise releases the tension.

Image guide (I)

The image guide (I) is fixed to the in-feed table, but can be moved out of the way. It slides through a groove (K) in the table arm and can be pulled back and stored in the storage place underneath the table surface.

The storage space for the image guide is covered by a flap (L) when the guide is in use.

Note:
When the image guide is in use and the nip is zero, the optical safety device ‘looks through’ holes (J) in the guide ends. When the nip is not set to zero the light-beam of the safety device will be interrupted by the image guide. Therefor the image guide must not be used (and stored away) when processing panels.

English

5.1.4 Error indications

When an error is detected, one or more LED’s are flashing and any rotation will stop.

Power indicator flashing;

Machine is in stand-by mode. The power is on and the optical safety device is active.

Press the control ON/OFF button to activate the machine.

Forward indication flashing;

Motor overload.

Press the stop button and check the material flow and the tension setting of the unwind shafts.

Reverse indicator flashing;

Motor overload.

Press the stop button and check the material flow and the tension setting of the wind-up shafts.

Forward and reverse indicator flashing;

System error.

Disconnect and then reconnect the power. If the error persists, contact your service organization.

All four pressure indication LED’s are flashing;

Pressure too high or nip setting too narrow.

The LED’s start flashing at 10% overload. When the pressure exceeds a 20% overload an audible signal is generated. Increase the nip to lower the pressure.

5.2 Operating modes

The machine is working either in normal mode or in slow mode. In the normal mode the rollers can rotate in forward or in reverse direction.

A special mode is the jog mode. This mode is used when the machine is left on for some time whithout being used.

5.2.1 Normal forward mode

Normal forward mode can be activated from standstill by the start button or by the footswitch (when slow mode indication is not active).

The rotation speed of the rollers in normal mode is set via the speed control knob.

Rotation is started when the start button or the footswitch is pressed and is indicated by the LED next to the start button.

When the footswitch is pressed, operation control is taken over by the footswitch and the rollers will rotate forward until the footswitch is released.

To return control to the control panel without stopping;

- press and hold the start button,
- release the footswitch
- and then release the start button.

Rotation is stopped when the stop button is pressed.

An interruption of the light beam of the optical safety device will also stop the rotation of the rollers. After the interruption is removed, the start button must be pressed to continue the process.

5.2.2 Reverse mode

Reverse roller rotation can only be started from standstill by pressing the reverse button.

CAUTION:
The rolls at unwind and combi positions will not rewind the material.

Reverse rotation is indicated by the LED next to the reverse button and is stopped when the stop button is pressed.

The speed is determined by the speed control knob.

WARNING:

KEEP CLEAR OF THE REAR SIDE NIP WHEN RUNNING IN REVERSE MODE.

When running in reverse, the optical safety device (at the front side nip) is disabled.

Reverse rotation at slow mode speed is not possible.

5.2.3 Slow mode

Slow mode is selected and de-selected by pressing the slow mode button for 1 second. Selection is indicated by the slow mode indication LED.

When selecting slow mode from normal forward mode, the speed (normal speed) will not change until the footswitch is pressed.

Selecting slow mode speed in reverse direction is not posible.

Normal speed

Normal speed in slow mode is still determined by the speed control setting.

Switching between normal speed and standstill is done by the start and the stop button.

Pressing the reverse button will start rotation at normal speed in the reverse direction.

Slow mode speed

Slow mode speed is a fixed low speed (see specifications) independent from the speed control. Slow mode speed can only be selected in slow mode by pressing and holding the footswitch.

WARNING:

KEEP CLEAR OF THE NIP WHEN RUNNING AT SLOW MODE SPEED. THE OPTICAL SAFETY DEVICE IS DISABLED.

When the footswitch is released, the slow forward rotation is stopped.

Changing to normal speed

To change from slow mode speed to normal speed without stopping, press and hold the start button, release the footswitch and then release the start button.

Note:
Changing to normal speed will not deactivate slow mode.

Pressing the footswitch again will slow down rotation to slow mode speed again.

5.3 Placing film rolls

5.3.1 Auto-grip shafts

All shafts are the same. Their function is determined by their position in the machine.

The shafts fit into the machine in both ways.

On the control panel side of the machine the shaft and the suspension snap together by a gripper slot and gripper.

At the left-hand side of the machine the shaft has a thrust piece in the suspension. This thrust piece pushes the shaft into locking position when the shaft is turned.

To position the shaft correctly push it firmly into the suspensions and turn the shaft until it locks in.

Check the auto-grip mechanism on each shaft. The rubber cords should just touch the edges of the recess (Figure 16A: d = 8 ± 2.5 mm).

If not, see chapter 6 Maintenance.

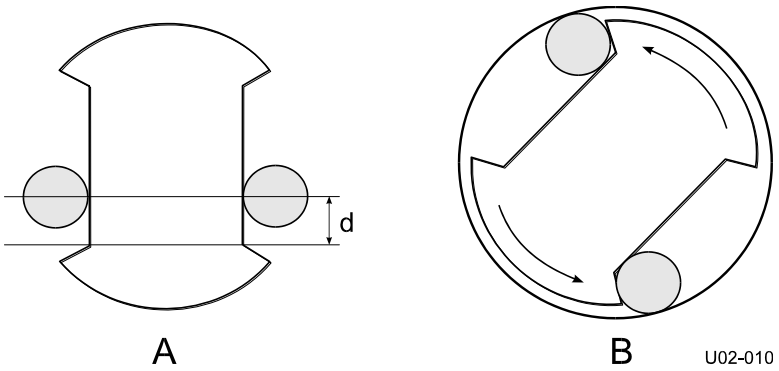


Figure 16: Auto-grip shaft

When the shaft is rotated inside a cylinder, the rubber cord will move to the side and gets caught between shaft and cylinder (Figure 16B). Rotating back will release the cord.

5.3.2 Use of films with release liner

When using a film with a release liner that must be removed, load the wind-up shaft with a scrap core (empty cardboard cylinder) of (at least) the same width as the film.

1. Take the auto-grip shaft from the wind-up position of the machine.
2. Place the scrap core on the shaft, holding the shaft as in Figure 17.

CAUTION:
Do not drop the end of the shaft on the floor.

3. Put the shaft with cylinder back into the machine.
4. Push both sides of the shaft firmly into their suspensions.
5. Turn the shaft until the grippers lock in.

English

5.3.3 Loading shaft with film rolls

The film roll is put on the shaft depending on the type of film and the use in the upper or lower section of the machine.

From European and Asian producers of film with release liner in general the film is rolled up with the liner (and adhesive) to the outside, whereas the American films have the liner and adhesive on the inside.

Film without release liner has its adhesive layer to the inside of the roll.

- In the upper section, the (adhesive) side in contact with the image must be on the top when unwinding the film to the front of the machine.
- In the lower section, the (adhesive) side in contact with the image must be on the bottom when unwinding the film to the front of the machine.

1. Put the film roll on a flat surface with enough space on one side to insert the shaft.

2. Take the auto-grip shaft from the unwind position of the machine.

3. Insert the shaft into the core cylinder of the film roll, holding the auto-grip shaft as in Figure 17.

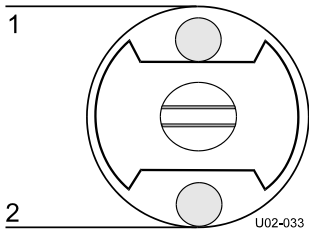


Figure 17: Auto-grip shaft position.

4. Place the shaft with the film roll in the correct way back into its suspensions (see Figure 17).

Unwind direction of film towards the front of the machine:

in the upper section:

- film with release liner on the outside unwinds from the top (1)
- film with release liner on the inside unwinds from the bottom (2)
- film without release liner unwinds from the bottom (2)

in the lower section:

- film with release liner on the outside unwinds from the bottom (2)
- film with release liner on the inside unwinds from the top (1)
- film without release liner unwinds from the top (1)

5. Push both sides of the shaft firmly into their suspensions.

6. Turn the shaft until the gripper locks in.

7. Position the film(s) and the scrap core(s) in the middle and align them.

Note:
When both upper and lower section are used, align both films by pulling the top film down at the rear side on to the bottom film.

8. Make sure the films (and scrap cores) are set up and aligned properly.

5.3.4 Presetting the tension

To enable the film to unwind without wrinkles a momentum (brake or tension) can be set to the roll.

On the right-hand side of the machine you will find tension control knobs, corresponding with each shaft.

Turn the tension control knob clockwise to set the tension or counter-clockwise to release the tension.

> **Note:**
> The unwind/wind-up shafts have a split tension setting: Turn clockwise for unwind tension and counter-clockwise to release the unwind tension. Turning further counter-clockwise will set wind-up tension (see also section 5.1.3).

When the film is webbed, it is recommended to set a low tension to each shaft by turning the knob clockwise until you feel some resistance.

On the unwind shaft this will prevent film to unwind without tension. On the motor-driven wind-up shaft it allows the shaft to slip and adapt its rotation speed to the speed of the film.

5.3.5 Pressure setting

Thin images

When processing thin images (thickness same as or less than the film) pressure is preset when the upper and lower material is webbed and the leader panel is out of the nip.

During processing the pressure can be adjusted. The best pressure setting for thin films is about 80%.

Panels

When processing panels, the leader panel is used to preset the pressure.

Use a leader panel of the same material, thickness and width as the panels to process.

1. Set the nip to the thickness of the panel.
2. Feed the panel into the nip in slow mode.
3. Set the pressure to approximately 80% for full-width panels.

> **CAUTION:**
> **For narrower panels set the pressure proportional to the width between 40% and 80%. E.g. half width equals 60%.**

4. Push the start button to run the panel through the machine.

5.4 Webbing

For most processes the machine must be webbed before images on thin film or on panels can be processed. The machine can be webbed for single sided or double sided processing. Single sided is generally used for processing boards.

Note:
In single sided processes adhesive residues will stay behind on the bottom roller where the film is wider than the images. To prevent this, a release liner of the same width as the top film can be used in the bottom section. The release liner can easily be removed later on.

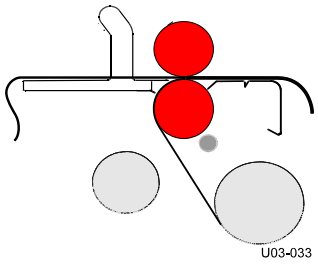


Figure 18: Trailing release liner

When webbing a film with a release liner, the film is always fed over a splitter bar (or idler), where the release liner is separated from the film.

To increase contact surface with the heated main roller, heat sensitive film also runs via this idler (splitter bar).

In this section an unwind (or wind-up) roll can also be an unwind/wind-up shaft position set as unwind (or wind-up).

To feed in the films a leader panel is needed of the same thickness as the panels to process. For processing thin images a leader panel is provided. When this panel is through, the nip is set to zero and the images can be fed.

When using panels, the image guide must be stowed away.

5.4.1 Upper section only

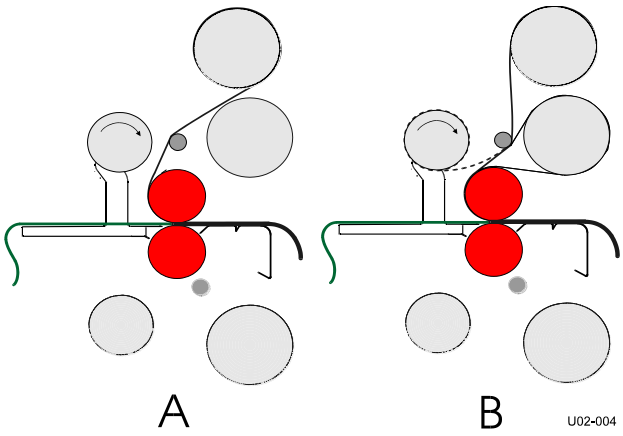


Figure 19: Webbing upper section.

1. Stow away the image guide.
2. Unwind the film from the upper or top unwind roll.
   - Feed a pressure sensitive film without release liner from the top unwind roll over the splitter bar (A),
   - Feed all other films underneath the splitter bar (B).

3. Pull the film forward until approximately 10 cm (4 in.) is on the in-feed table.
   If the film has a release liner:
   - Peel off the release liner,
   - Pull the release liner up and stick it to the scrap core on the wind-up shaft.
4. Stick the leader panel to the film.
5. Feed the panel into the nip using slow mode.
6. Butt up the next panel **or**,

When thin images must be processed:

7. **stop** when the panel is at the end of the table.
8. Bring the image guide in the upper position.
9. Bring the table roller in the upper position.
10. Feed the image or a scrap piece of release liner into the table roller nip and align it.
11. Feed the image untill it butts up with the panel.
12. Start at a low speed and keep feeding the image.
13. When the panel is through the nip, set the pressure to 80%.
14. Put the images on top of the end of the release liner.
15. End up again with a scrap piece of release liner underneath the image.

Note:
The pieces of scrap release liner are used to keep the bottom roller clean. A better method is to let a roll of release liner in the bottom half travel along with the top laminate. When the image is cut free, the release liner will fall off. In this case the double sided lamination process is used and both upper and lower section must be webbed.

During processing:

- Check and adjust the tension on the unwind- and wind-up shafts.
- Check and adjust the pressure setting while feeding through the boards or images.
- Now speed can be set to normal.

5.4.2 Upper and lower section

A leader panel is provided to help webbing the machine.

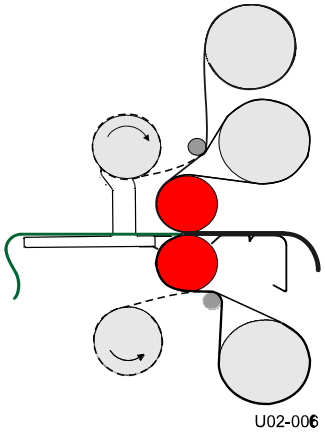


Figure 20: Upper and lower section webbed.

The film in the upper section is webbed first

1. Stow away the image guide.
2. Feed the film underneath the splitter bar (between splitter bar and upper roller).
   - Pressure sensitive film without a release liner from the top unwind shaft must be fed over the splitter bar.
3. Pull the film forward until it almost reaches the in-feed table and apply it to the upper roller.

   If the film has a release liner:
   - Peel off the release liner,
   - Pull it up and stick it onto the cylinder on the wind-up shaft.

Now web the lower section

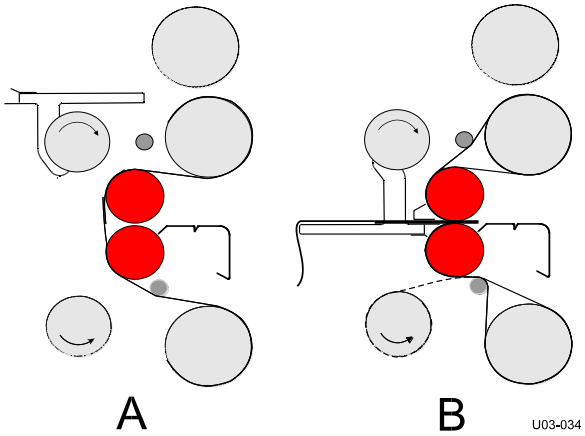


Figure 21: Webbing lower section.

4. Lift the in-feed table and put it in the upper position.

5. Unwind the film from the lower unwind roll at the rear side of the machine and pull it up till it reaches the upper material roll.

6. Allign the lower roll with the upper one.

7. Now web the lower material roll.

- Feed a pressure sensitive film without release liner underneath the splitter bar (A),
- Feed all other films over the splitter bar (B).

8. Pull the film forward until the end reaches above the nip and stick it to the film from the upper section.

If the film has a release liner:

- Peel off the release liner,
- Pull it over the wind-up shaft,
- Stick it from above onto the cylinder on the wind-up shaft.

When encapsulating:

- Set the top pull roller in the upper position and lock it on both sides.

9. Lower the in-feed table.

10. Push the films with a leader panel into the nip using slow mode.

Note:
Use a leader panel of the same material, thickness and width as the panels to process. When encapsulating it is recommended to use the provided release board as a leader.

Processing boards:

11. Set the pressure for optimum result when the leader board passes through.

12. Butt up the next boards.

13. End up again with the leader board.

Processing thin images:

11. When the leader board is through the nip, set the nip to zero and the pressure to 80%.

12. Flip up the image guide and the table rollers.

13. Feed in the images using the infeed table rollers.

While feeding the images:

- Check and adjust the tension on the unwind- and wind-up shafts.
- Check and adjust the pressure setting.
- Now speed can be set to normal.

5.4.3 Roll to roll

When webbing for an image roll to roll process, the lower front unwind/wind-up shaft is used as a supply (unwind) shaft for the images.

Single sided lamination;

When laminating single sided the unwind/windup shaft in the rear of the lower section can be used to wind-up the completed product (Figure 22, A).

> **Note:**
> To prevent adhesive residues from staying behind on the bottom roller use a release liner in the bottom section and follow the double sided lamination process. The release liner can easily be removed later on.

Double sided lamination;

The unwind/wind-up shaft in the rear of the upper section is used to wind-up the processed images (Figure 22, B).

This means the top laminate (with or without release liner) must be webbed on the top unwind shaft in the upper section and in the lower section only a laminate without a release liner can be used.

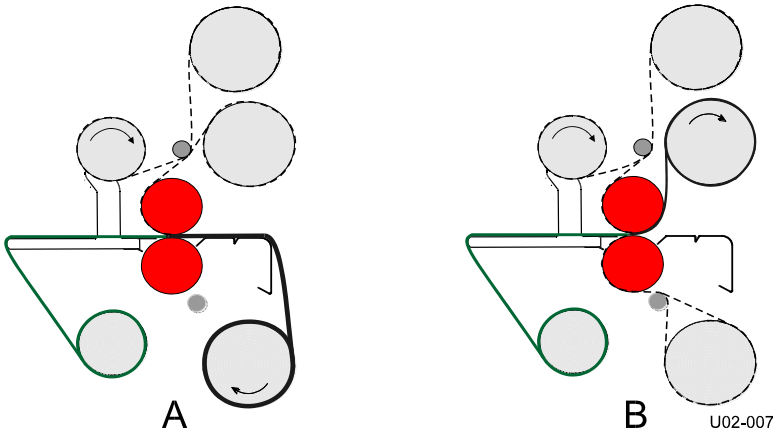


Figure 22: Webbing image from roll to roll.

The laminates are webbed first;

1. Web the upper and lower section laminates as described in the previous sections.
2. Feed the films with a leader board through the nip.
3. When the leader panel is through the nip, cut off the leader panel.
4. Stick the leading edge of the films at the rear side of the machine onto the cylinder on the wind-up shaft.
5. Set the tension control for this shaft to wind-up tension.
6. Set the nip to zero (no pressure).
7. Pull the image to the front and feed it over the in-feed table into the nip.

To unload the machine;

When the image and through the nip (roll is empty), cut the films at approximately the same length (at the splitter bars). Open the nip and pull out the result at the rear side.

5.4.4 Pull rollers

The pull rollers are generally used in the encapsulation process (hot processing double sided lamination) to get a better encapsulation result.

- Before webbing set the top pull roller in the upper position and lock it on both sides.
- Webbing is the same as described before, except the films are now, with a leader board, pushed through the main roller nip and the pull roller nip.

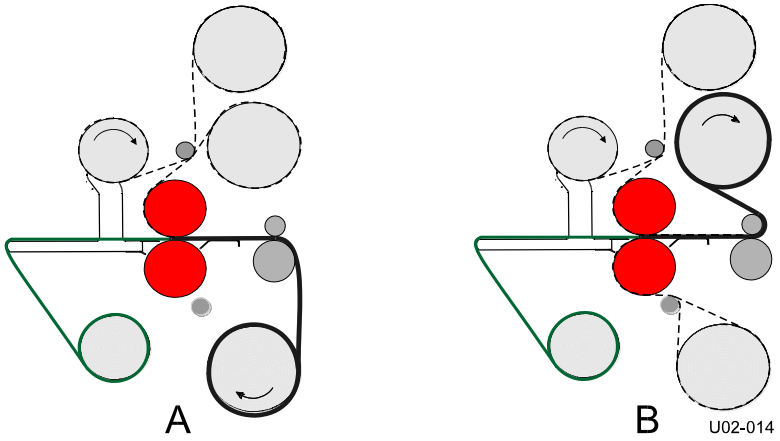
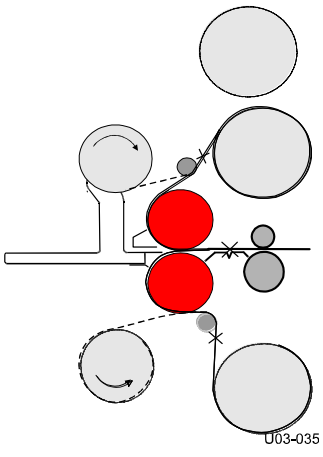


Figure 23: Roll to roll with pull rollers engaged.

5.4.5 Unloading

Unloading can start when the last image is completely through the nip and the pull rollers when used.

Use a blade cutter to cut the materials.



- Cut the laminates just before the splitter bars (see Figure 24).
- Let the machine run till the result is out off the pull rollers (when used).
- Open the nip and the pull rollers.
- Pull the materials out of the machine from the rear.

When panels are processed, the last panel is followed by a leader panel.

- Feed the leader panel halfway through the nip.
- Cut the laminates at the splitter bars and the result behind the main rollers (between last image and leader panel).
- Then back-up the leader panel instead.

Figure 24: Unloading.

5.5 Processes

5.5.1 Mounting images or decals

In this process the machine is not webbed with film.

- When mounting images onto a (pre-coated) board (B), the adhesive is on the mounting side of the board,
- When mounting decals (A), the adhesive is on the back of the image.

The mounting process is equal for both.

1. Stow away the image guide and table roller.
2. Remove the shafts from the upper section.
3. Preset the nip and the pressure (see section 5.3.5).
4. Put the board on the in-feed table.

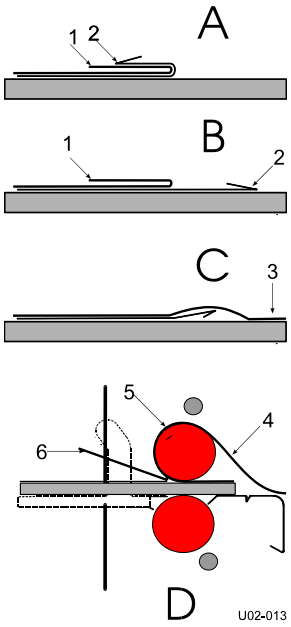


Figure 25: Mounting images or decals.

5. Put the image on top of the board (image side up). Turn back the image at the machine side (1).
6. Turn back approx. 25 mm (1 in.) release liner (2) at the machine side and crease this evenly from the inside out.

Note:
The final quality depends on the way in which the leading edge of the image is applied to the board.

7. Apply the image to the board (3).
8. Insert the edge with the image adhered to into the nip.
9. Lay the loose end of the image smoothly over the upper roller (4).

Note:
Use the footswitch to start the machine in slow mode, keeping your hands free to guide the image.

WARNING:
KEEP YOUR FINGERS CLEAR OF THE NIP. THE OPTICAL SAFETY DEVICE IS NOT FUNCTIONING IN SLOW MODE.

10. With your left hand; peel back the release liner (6) from the image or board as it is slowly fed into the nip one section at a time, without stopping.

Note:
Removing the release liner completely exposes the adhesive to dirt and dust that will get trapped under the image.

11. With your right hand; keep the image smooth against the upper roller (5), preventing the image from wrinkling.

Note:
For the best result; do not stop while feeding an image.

5.5.2 Pre-coating panels

This process is used to coat boards (substrates) with a pressure sensitive mounting film onto which images can be mounted. This process can also be used to create a carrier board.

Note:
The mounting film is usually provided with one release liner.
Place the film and web it as if it has no release liner, over the splitter bar.

1. Place the roll of mounting film on the shaft of the upper unwind position.
2. Set the nip to correspond to the thickness of the panels to be processed.
3. Web the film using a leader board of the same material, thickness and width.
4. Set the pressure while feeding the leader board.
5. Before the end of the leader board enters the nip, butt up the panel to be pre-coated.

When more panels have to be pre-coated feed them in continuously without any gap.

At the end, use a leader board again to finish. This prevents the adhesive from touching the bottom roller.

6. Butt up the leader board and feed it in until the previous panel is out of the nip.

After removing the release liner from the pressure sensitive mounting film, the board has an adhesive coating ready to mount an image. For mounting images see section 5.5.1.

To unload the machine;

CAUTION:
Do not cut film close to or on the rollers. This will damage the silicone coating of the rollers and will void the warranty.

7. Cut this leader panel free.

8. Cut the film using a blade cutter.

9. Back-up the leader board using the reverse.

5.5.3 Single-sided lamination

Images are laminated single-sided using carrier (or release) boards. This laminate can be a heat sensitive laminate or a pressure sensitive adhesive with release liner.

- The image is put on the carrier board with the image side up,
- All steps in this process are the same as when pre-coating a board (section 5.5.2).

Another option is to use release liner as bottom laminate in a double sided lamination proces (see section 5.5.5). After a laminated image is cut free, the release liner will separate of itself from the image.

5.5.4 Over-lamination

After an image is mounted to a panel, a protective laminate can be applied. This over-laminate can be a heat sensitive laminate or a pressure sensitive adhesive with release liner.

- All steps in this process are the same as when pre-coating a board (section 5.5.2).

5.5.5 Double-sided lamination

Encapsulating images with cold laminates is called double-sided lamination (and is normally not done with panels).

1. Load and web laminating film in the upper and the lower section.

2. Stick a leader board to the films and feed it through the nip.

3. When the leader board is completely out of the nip, lower the upper roller onto the bottom roller (nip setting = 0).

4. Now feed the images into the nip, allowing a gap between them.

5. Cut the film with the blade cutter when the images are clear of the rollers.

To unload the machine;

6. Cut both films along the splitter bar using an enclosed blade cutter.

7. Open up the nip and remove the film between the rollers by pulling it out from the rear.

5.5.6 Encapsulation

Encapsulation is the term for sealing an image with heat sensitive laminates on both sides.

Note:
The heated rollers need time to reach their set temperature (e.g. from room temperature to maximum takes approximately 1 hour). It is recommended to let the machine run at low speed, to avoid uneven hot spots.

- Switch ON both heaters.
- Set the temperatures (see the specifications of the materials used) and allow ample time to reach the set temperature.
- Set the upper pull roller in the upper position before webbing and lock it in position.

- The procedure is the same as the double-sided lamination above (section 5.5.5).

5.5.7 Decaling

When decaling, a laminate is put over the image side and an adhesive backing is put on the backside of the image.

- The process is the same as double-sided lamination (section 5.5.5).

This decal can later be mounted onto a panel or other substrate.

5.6 Settings

Every laminate and every image material has different characteristics. So it is important to start off with a test image to find out the best settings for an optimum result.

This machine works best when the pressure is set to approximately 80%.

When the result is still silvering (gray spots at both edges of the result) the pressure can be increased, but it is also possible that the temperature or the speed is not correct.

When the result or the materials entering show wrinckles, the pressure or the tension might be incorrect.

For example:

- Cold laminates often need little unwind tension,
- Whereas hot laminates need more unwind tension,
- When the film wrinckles before and on the main roller tension must be increased,
- When encapsulating, the pull rollers must be used to avoid wrinckles in the result.

Refer to the trouble shooting section 6.3 for more problem solving suggestions.

6 MAINTENANCE

6.1 Cleaning

The machine has to be cleaned regularly. Dirt and dust will have a negative influence on the result of the lamination processes.

CAUTION:
Do not use abrasive materials for cleaning the machine. This can damage the painted surfaces or the silicone covering of the rollers.

Use a damp cloth for cleaning.

CAUTION:
Make sure water does not run into any of the cabinets. This can damage the electrical circuits when power is applied.

Clean the exterior of the machine with a damp cloth as needed. If necessary, use a household-cleaning solution to remove difficult stains.

Clean the shafts and the rubber cords on it as required.

6.1.1 Cleaning the silicone covered rollers

The rollers must be cleaned regularly to prevent a build-up of adhesive residue. This may eventually damage the rollers.

Use a damp lint-free cloth to remove dust and other dirt.

Use a silicon-cleaning block to remove the adhesive stains from the rollers.

Note:
Adhesive is easier to remove when the rollers are hot.

Put a waste panel between the rollers when cleaning the upper roller, to prevent adhesive remnants from falling onto the lower roller.

WARNING:
MAKE SURE THE ROLLERS ARE COLD WHEN USING ALCOHOL FOR CLEANING. ISOPROPYL ALCOHOL IS VERY EASY FLAMMABLE.

Difficult stains can be removed with the aid of isopropyl alcohol (IPA) and a clean lint-free cloth.

Do not pour isopropyl alcohol directly on the machine.

6.2 Preventive maintenance

Our machines are designed in such way that they need little (preventive) maintenance in addition to the cleaning.

The following checks have to be performed regularly:

- Auto-grip shafts with blocking cords.

6.2.1 Auto-grip shafts

Check the auto-grip mechanism on each shaft.

- The distance (d) between the rubber cords and the edges of the recess should be 8 ± 2.5 mm minimum (the cord must not touch the skew).

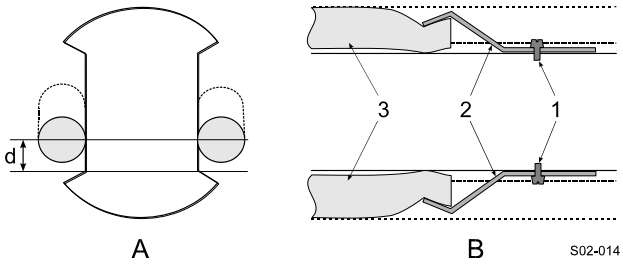


Figure 26: Auto-grip shaft

If not, correct as follows:

- Loosen the clamp (2) with the screw (1) until the cord is free on one side,
- Shorten the cord by approximately 10 mm (4 in.),
- Put the end of the cord back underneath the clamp (2),
- Secure it by tightening the screw (1),
- Check the mechanism again as above.

6.3 Trouble shooting

During processing wrinkles can show up in the image (1) on the in-feed table (2) and in the process result (4) on the output table.

The figures below show some examples where it is caused by the main rollers (3) or the pull rollers (5), and gives a possible solution.

Wait until a few meters is processed to see results.

Pressure too high.

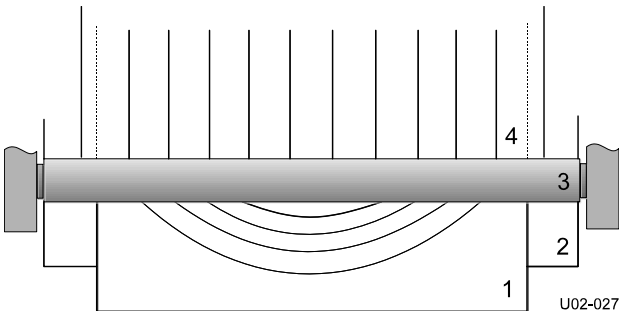


Figure 27: Wrinkles due to high pressure.

- Decrease the roller pressure a little (5-10%).

Pressure too low.

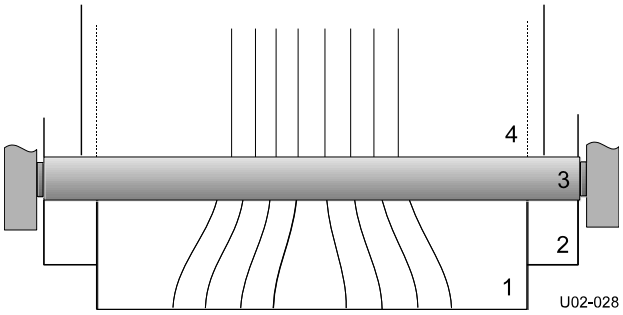


Figure 28: Wrinkles due to low pressure.

- Increase the roller pressure a little (5-10%).

Unwind tension too low.

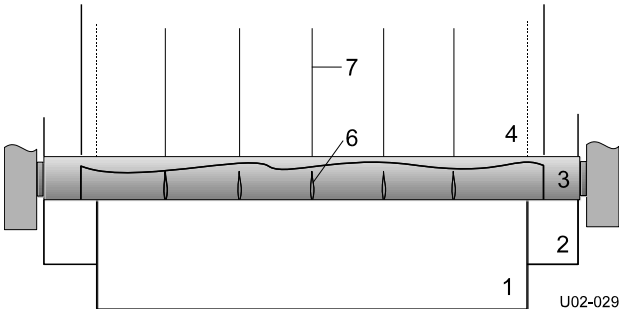


Figure 29: Wrinkles due to low unwind tension.

- Increase the unwind tension until the wrinkles (6) in the film on the roller disappear. The lines (7) in the process result will disappear as well.

Pull tension too low.

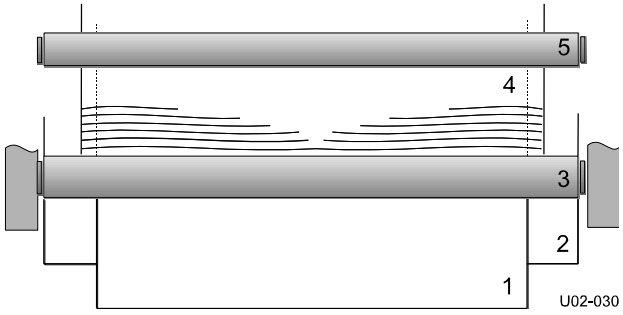


Figure 30: Wrinkles due to low pull tension

- This is a machine adjustment error. Contact your dealer and ask for technical assistance.

Too much heat in the final result.

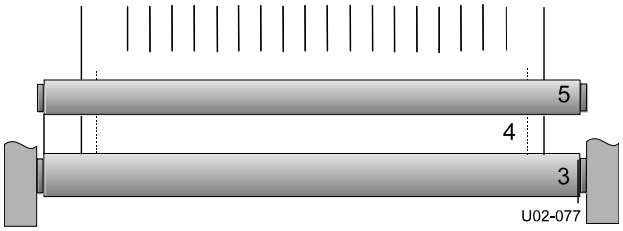


Figure 31: Wrinkles due to too much heat.

The result is still too hot after the pull rollers. The bottom pull roller also gets hot.

- Reduce the heater settings.
- Check the function of the cooling device.

Roller alignment fault.

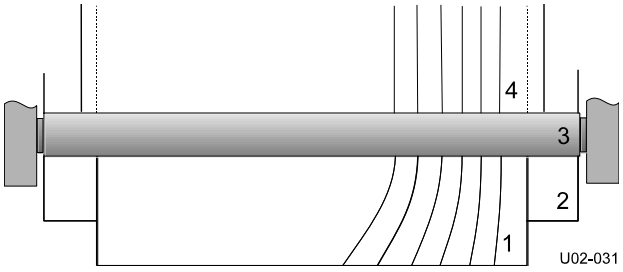


Figure 32: Wrinkles due to faulty roller alignment.

The wrinkles occur on one side only (left or right).

- This is a machine adjustment error. Contact your dealer and ask for technical assistance.

Material rolls are jumping.

A regular tick can be heard in the shaft suspension.

- Adjust the shaft support (1) by turning up or down the screw (2) with an Allen key.

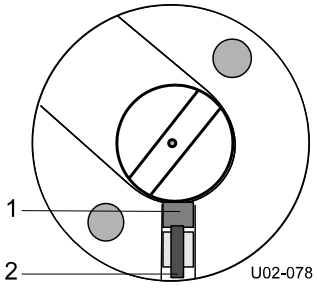


Figure 33: Shaft support adjustment.

6.4 Technical assistance

For technical assistance you can contact your dealer or the address on the copyright page in the front of this manual.

Make a clear description of the problem before contacting technical assistance.

Please keep the type and serial number of your machine at hand.

You can find this data on the identification plate of your machine, which can be found on the rear side of the right-hand cabinet.

7 GLOSSARY

Carrier board or sled
A board with a non-stick surface that is used when laminating one side of an image only.

Decal
An image with an adhesive backside (Am.: Sticker).

Decaling
Providing an image with laminate on the image side and adhesive on the backside.

Encapsulating
Sandwiching an image between two heat sensitive films.

Laminate
A thin film of clear material to be permanently affixed onto an image.

Laminating
Providing an image with a thin film of clear material.

Leader panel
A piece of stiff cardboard or foam used to lead film into the nip of the main rollers. In addition it is used when pre-coating to prevent adhesive getting onto the rollers.

Main rollers
A set of two silicone coated rollers that perform the actual process.

Mounting
Permanently affixing an image onto a backing board.

Mounting film
Adhesive backing to make an image self-adhesive. On the side that is in contact with the image the carrier has an adhesive with or without release liner. The carrier can function as release liner or be supplied with a second (cold) adhesive layer and release liner.

Nip
The area where the top and bottom main rollers meet is called the nip.

Pre-coating
Coating a substrate with an adhesive mounting film onto which an image can be mounted.

Pull rollers
Set of rollers used in the encapsulation process to stretch the process result in order to avoid warping.

Release liner
Backing film protecting the adhesive layer of a laminate or mounting film. Once the release liner is removed, the adhesive layer becomes exposed.

Roll
A (shaft with a) cylinder loaded with film or release liner.

Roller
One part of the main element in the machine that performs the actual process (see main rollers).

Scrap core
An empty cardboard cylinder left over when all material on a roll is used.

Webbing
Loading the machine with film, so that the machine is ready for processing.